



**REPORT**

**Biffa Waste Services Ltd., Renwick Road Rail Hub**  
*Environmental Permit Application, Flood Risk*

Submitted to:

**Biffa Waste Services Ltd**

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Submitted by:

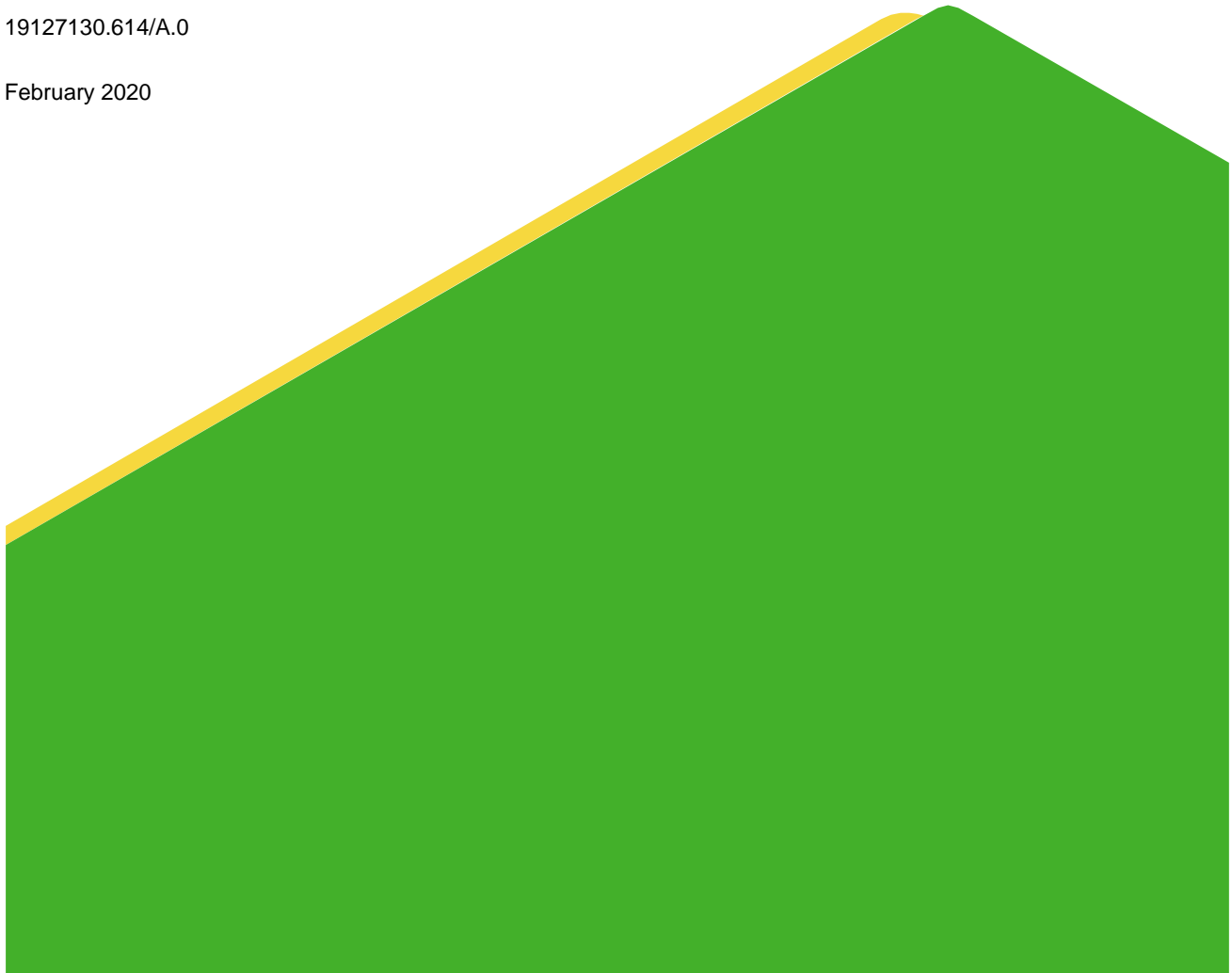
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19127130.614/A.0

February 2020



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Map of Rivers in Barking and Dagenham

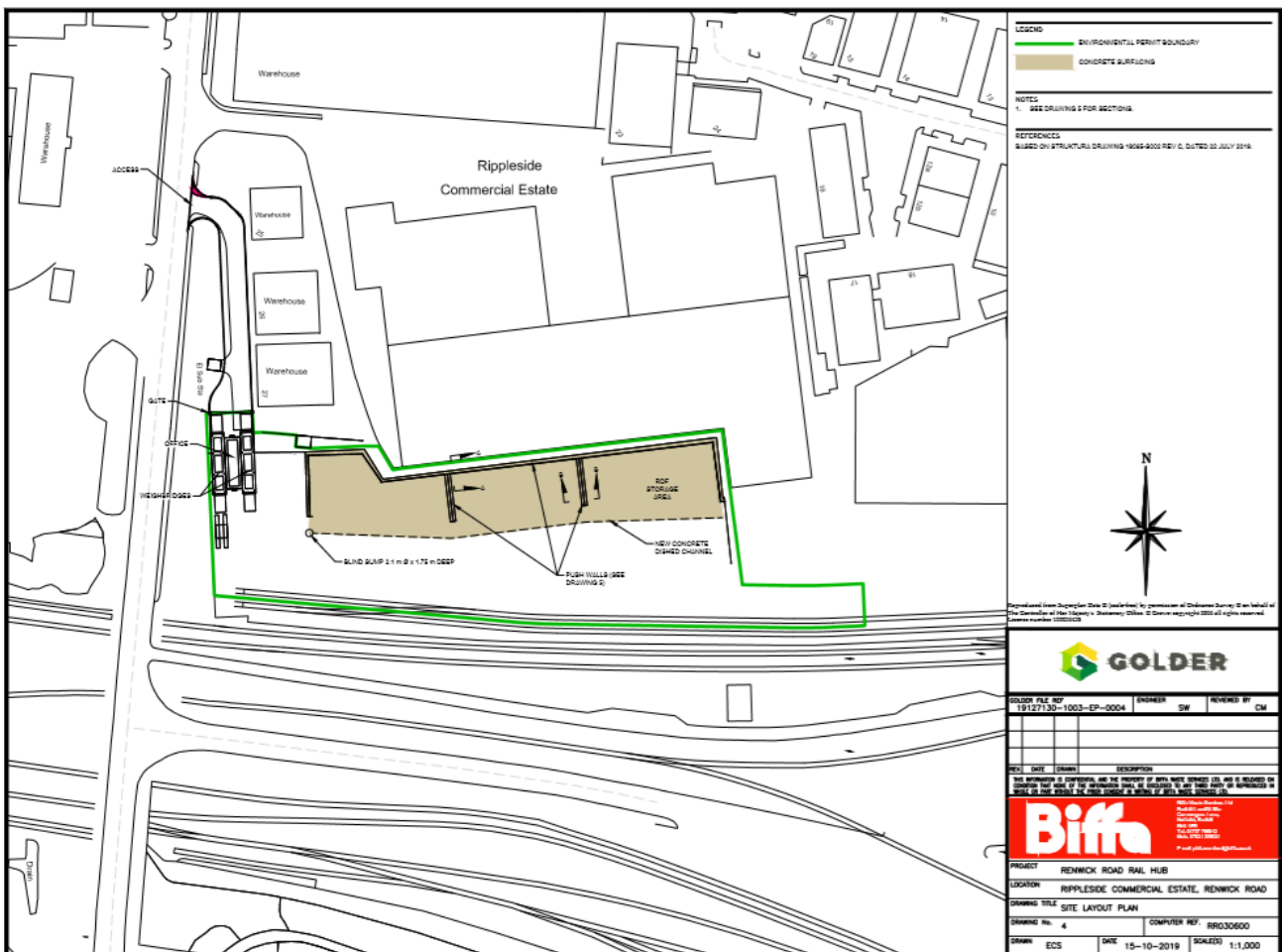
## 1.0 INTRODUCTION

Biffa Waste Services Ltd ('Biffa') has requested Golder Associates (UK) Ltd ('Golder') to prepare an Environmental Permit ('EP') Application ('Application') for a Waste Transfer Station at Renwick Road, Barking, East London ('Site') at NGR TQ 470 833. The location of the Site is shown on **Drawing 1 – Site Location Plan** in **Appendix 5**.

This report presents an assessment of the proposed facility and the proposed activities with regards to the Site location and the potential risk of flooding. The report follows the methodology set out in the National Planning Policy Framework together with presenting summary information on the proposed development.

## 2.0 DEVELOPMENT PROPOSALS

The Permit boundary is shown in Figure 1.



**Figure 1: Permit Boundary**

The Site will accept and enable the transfer of up to 300,000 tonnes per year of selected non-hazardous wastes. The Site will receive waste materials by road, stockpile, and then load onto rail wagons (for onward distribution) under an Environmental Permit. Wastes will comprise:

- Granular inert and non-hazardous materials delivered to the Site by HGV which will be placed into temporary stockpiles ('bays') prior to loading onto rail wagons for onward haulage for re-use, recovery or disposal at other suitably permitted sites; and

- Baled Refuse Derived Fuel ('RDF') in locked sea containers for temporary storage of those containers prior to loading the sea containers onto rail wagons for onward haulage for recovery or disposal at other suitably permitted sites.

Given the location and environmental setting of the Site, environmental management will be fundamental to the effective management and operation of the Site. The waste transfer activities at Site will be subject to an Environmental Permit which will control the following:

- An annual waste tonnage no greater than 300,000 tonnes per year;
- The maximum amount of waste stored at the Site at any one time will not exceed 10,000 tonnes;
- No waste treatment activities including screening or crushing will be carried out at the Site;
- No waste will be burned at the Site; and
- There will be no point source emissions into surface water or groundwater. Surface water will be managed within a closed drainage system and in accordance with the Permit.

The Site will be a 24/7 operation. Incoming road deliveries will tend to be daytime (07:00 to 18:00) and export by train at evening or night-time. The bays will be managed and loading rotated to ensure the minimum residence time for any waste. Bays will be regularly completely emptied.

## 3.0 DEVELOPMENT SITE AND LOCATION

### 3.1 Site Location

The Site is located off Renwick Road, Barking, East London IG11 0SQ. The Site is situated on an area of 'brownfield' land approximately 50 m wide and 150 m in length located between Rippleside Commercial Estate to the north and the railway line (a major rail corridor) to the south. The Site comprises the wider, western end of a long strip of marginal railway land, the rest of which is narrower, covered in self-sown vegetation and currently inaccessible. The Site is fenced and gated. It has been in previous industrial use and is surfaced with compacted hardcore.

The Site will comprise a rail siding and loading facility, with aggregate storage bays, container (baled RDF) storage area, access road with two weighbridges and site office, as shown on Figure 1. Access to the Site is from Renwick Road which leads directly to the A13.

### 3.2 Site Location Considerations

The operations at the Site rely on access to the road network and more critically to the rail network. Access points to road networks are reasonably flexible, however suitable access points to the rail network are very rare.

The Site benefits from excellent connectivity to the A13 with good road access into London and the surrounding area. The location also benefits from the availability of suitable land on which to construct dedicated rail sidings adjacent to an existing rail line, which has capacity for the intended operations. These features make the location of the Site ideal.

## 4.0 FLOOD ZONING

### 4.1 Local Flood Strategy

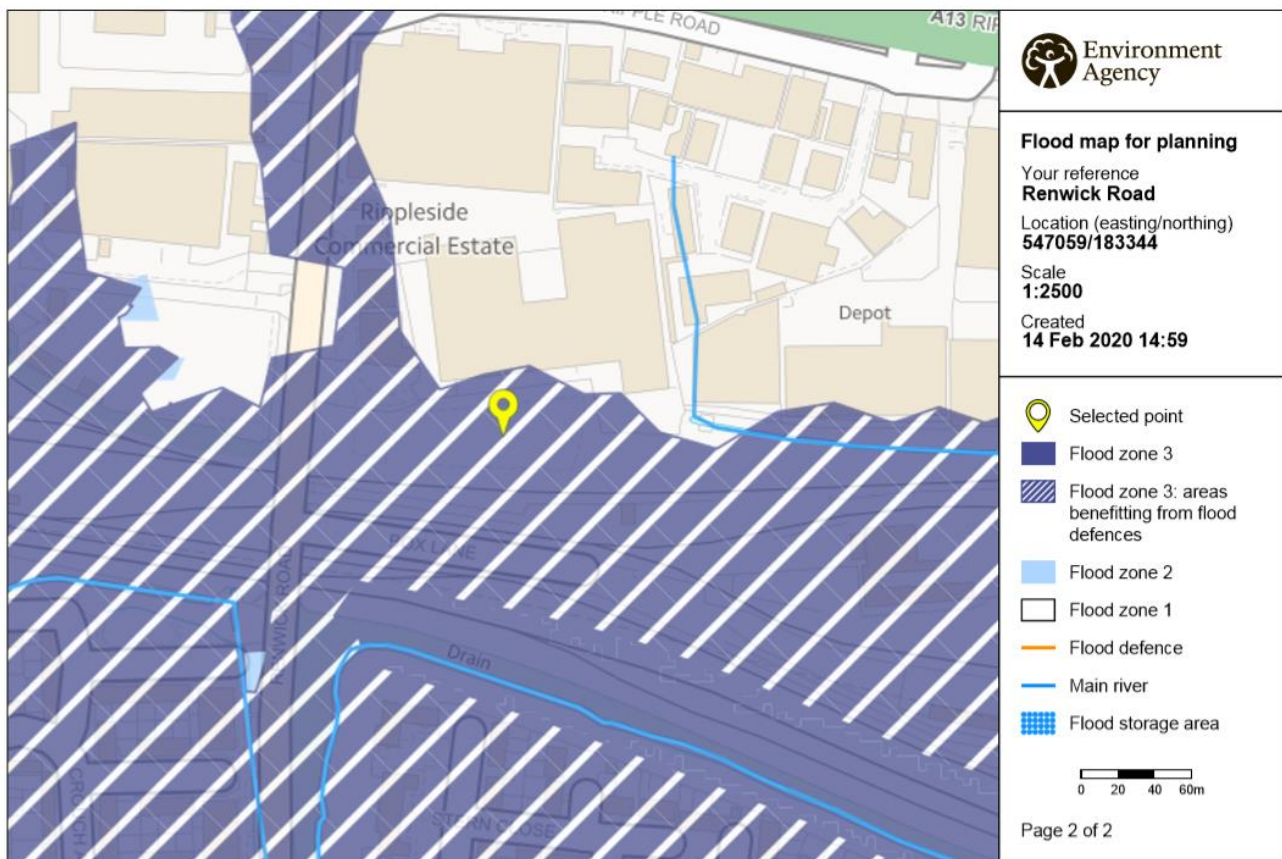
The Site is located in the London Borough of Barking and Dagenham that has produced a Local Flood Risk Management Strategy. The proposed development is in general accord with the council’s objectives and utilises best practice design techniques.

The Local Flood Risk Management Strategy contains a map of Rivers in Barking and Dagenham, which is presented in **Annex A**. The map shows that the ‘Ship & Shovel Relief Sewer’ runs to the south of the rail lines, a tributary of this watercourse emerges just to the east of the Site and flows to the north of the rail line before flowing south under the rail lines to join the Ship & Shovel Relief Sewer. The Ship & Shovel Relief Sewer is designated as a ‘Main River’.

### 4.2 Environment Agency Flood Maps

Selected Environment Agency Flood Maps are presented below.

The Environment Agency Flood Map for Planning indicates that the Site is located in Flood Zone 3: areas benefitting from flood defences. Details of the flood defences have been requested from the Environment Agency; however, the details were not available at the time of writing and the exact details of existing flood defences which benefit the Site are not considered material to this application. Flood Zone 3 (high probability) indicates that there is greater than 1% annual probability of flooding from fluvial sources, or greater than 0.5% annual probability of flooding from tidal sources.



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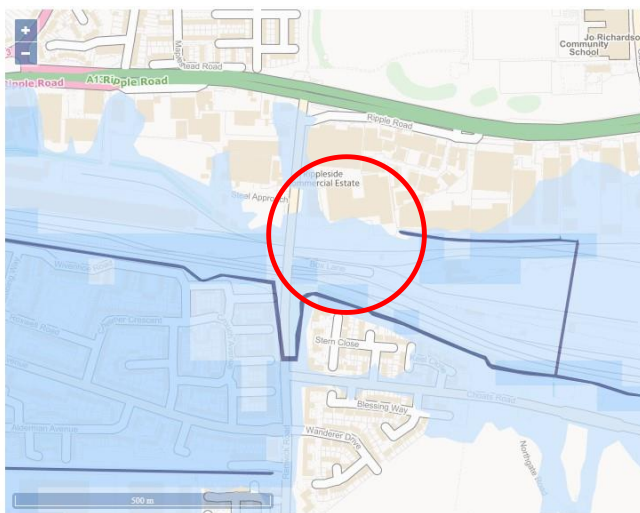
Figure 2: Environment Agency Flood Map for Planning

The Environment Agency Map showing the extent of flooding from rivers and the sea indicates it is in a low risk zone, Figure 3a.

The Environment Agency Map showing the extent of flooding from surface water indicates it is in a high to low risk zone, Figure 3b.

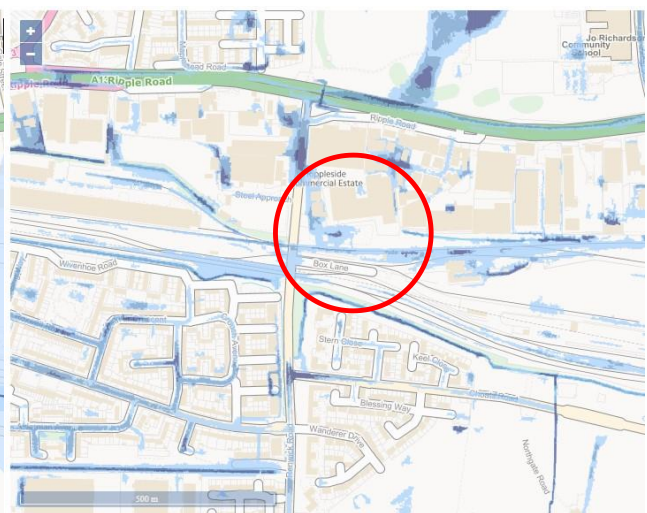
The surface water high risk scenario depth map indicates that there is a high risk that a small area of the Site may flood to a depth of below 300 mm, Figure 3c.

The surface water low risk scenario depth map indicates that there is a low risk that the Site may flood to a depth of 300 mm to 900 mm, Figure 3d.



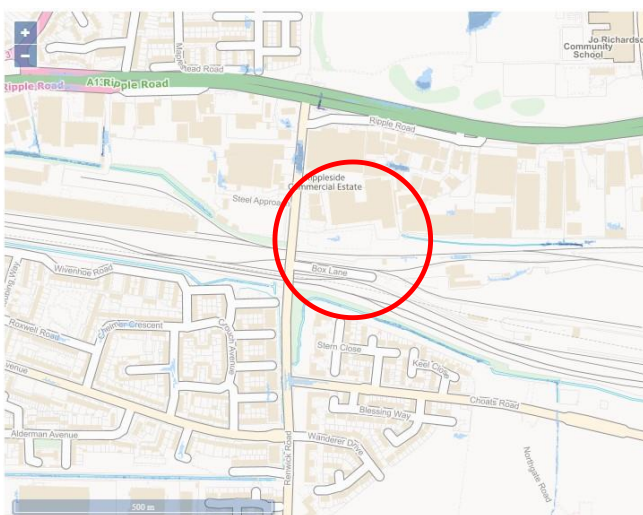
Extent of flooding from rivers or the sea  
 ● High ● Medium ● Low ● Very low

Figure 3a: Extent of flooding from rivers or the sea



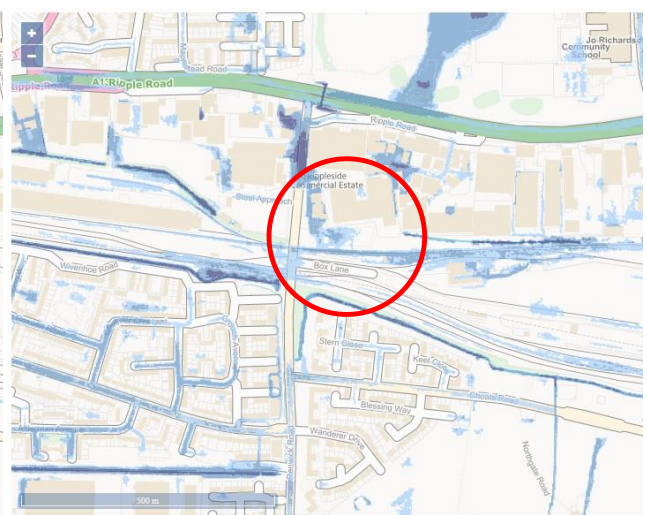
Extent of flooding from surface water  
 ● High ● Medium ● Low ● Very low

Figure 3b: Extent of flooding from surface water



Surface water flood risk: water depth in a high risk scenario  
 Flood depth (millimetres)  
 ● Over 900mm ● 300 to 900mm ● Below 300mm

Figure 3c: Surface water flood risk: water depth in high risk scenario



Surface water flood risk: water depth in a low risk scenario  
 Flood depth (millimetres)  
 ● Over 900mm ● 300 to 900mm ● Below 300mm

Figure 3d: Surface water flood risk: water depth in low risk scenario

**Figure 3: Flood Risk Maps**

The purpose of these maps is to highlight those areas potentially at risk of flooding. These maps are considered to be indicative and depending on location may not accurately represent all flow paths. They are also generated using GIS terrain information which may not accurately represent the actual ground surface, particularly if recent development has taken place. However, it is concluded that parts of the Site are located in an area identified as having a high potential risk of flooding, and this must be recognised in the design of the facility.

## 5.0 SEQUENTIAL TEST

As set out in the National Planning Policy Framework, the aim of the sequential test is to steer new development to areas with the lowest risk of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.

If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in national planning guidance.

The National Planning Policy Framework Guidance identifies the activities to be carried out at the Site to be 'less vulnerable'. Table 3 within this document indicates that 'less vulnerable' activities such as 'waste treatment (except landfill and hazardous waste facilities)' and 'minerals working and processing' are appropriate and compatible for development in Zone 3a and therefore does not require an 'exception test'.

**Table 3: Flood risk vulnerability and flood zone 'compatibility'**

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	✗	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	✗	✗	✗

**Key:** ✓ Development is appropriate.  
✗ Development should not be permitted.

Table 1: Technical Guidance to the National Planning Policy Framework Table 3 - Flood risk vulnerability and flood zone compatibility.



As indicated in Sections 2 and 3, the location of the facility is dependent on the existing infrastructure, in particular access to the rail network and the availability of a rail siding loading point. Biffa and GB Rail Freight have undertaken extensive searches to find a suitable location and this is the most appropriate location available.

## 6.0 SURFACE WATER MANAGEMENT

Surface water management at the Site primarily consists of infiltration drainage with only the material storage areas having impermeable concrete surfacing. The levels at the Site will be gently graded to promote drainage from the north to the south toward the railway. The southern side of the concrete storage area will have a dished drainage channel along the edge to collect runoff from the storage area and direct it to a blind sump located at the western end of the concrete area.

## 7.0 SITE-SPECIFIC FLOOD RISK

Operations at the Site are basic and pose little threat to the environment:

- The aggregate material is inert and does not have the ability to contaminate flood waters;
- Stockpiles of aggregate materials are in bays and might be slightly eroded by flood water 'lapping' at the base but not washed away;
- The RDF will be stored in ISO shipping containers which are weather-proof and will therefore protect the RDF from flooding;
- The surface water sump only contains water and sediment;
- Fuel and oil stored at the Site, will be stored in an appropriate manner, cognisant of the flood risk;
- The weighbridge will be ramped and located above the ground surface, providing protection from minor (<300 mm) flooding;
- The office will be raised to the level of the weighbridge, about 600 mm above ground level;
- The equipment used on Site is robust outdoor construction plant, designed to work in wet conditions. As the operations are 24/7, this will allow the Site to be made safe and secure in a controlled manner; and
- If the Site becomes flooded the Site will shut until such time as operations can safely recommence.

The key activity governing the operation of the Site will be the functioning of the railway. If the railway is flooded the Site will temporarily close until such time operations can re-start. If the Site is flooded, the railway will also be flooded.

The facility is designed to be flood resilient. The weighbridge and offices will be raised. Raised plant parking areas may be considered to allow the loading plant to be parked above flood level, therefore avoiding damage to plant and avoiding potential pollution from fuel or oil.

## 8.0 CONCLUSION

The key consideration for the siting of the facility is access to the rail network, an attribute which this location satisfies. The location also provides excellent connectivity to the road network and access to development areas in London and Essex.

The Site is a brownfield area and as such the proposed development is bringing marginal railway land into beneficial use. Although parts of the Site have a high potential risk of flooding, the proposed site use is compatible with the location in an area which is susceptible to flooding. The waste material which will be stored on site is aggregate which is not affected by flooding and RDF which is stored in weatherproof shipping containers.

When the site floods, the railway will also be flooded, and the site will be made safe and temporarily closed until the flood waters recede. Furthermore, since this is a new development the facility will be designed with flood resilient features which will minimise the impact of any flooding and allow operations to resume with minimal disruption or damage.

## 9.0 REFERENCES

- 1) National Planning Policy Framework, Ministry of Housing Communities and Local Government, February 2019
- 2) Technical Guidance to the National Planning Policy Framework, Department for Communities and Local Government, March 2012
- 3) London Borough of Barking and Dagenham Local Flood Risk Management Strategy, February 2017

## Signature Page

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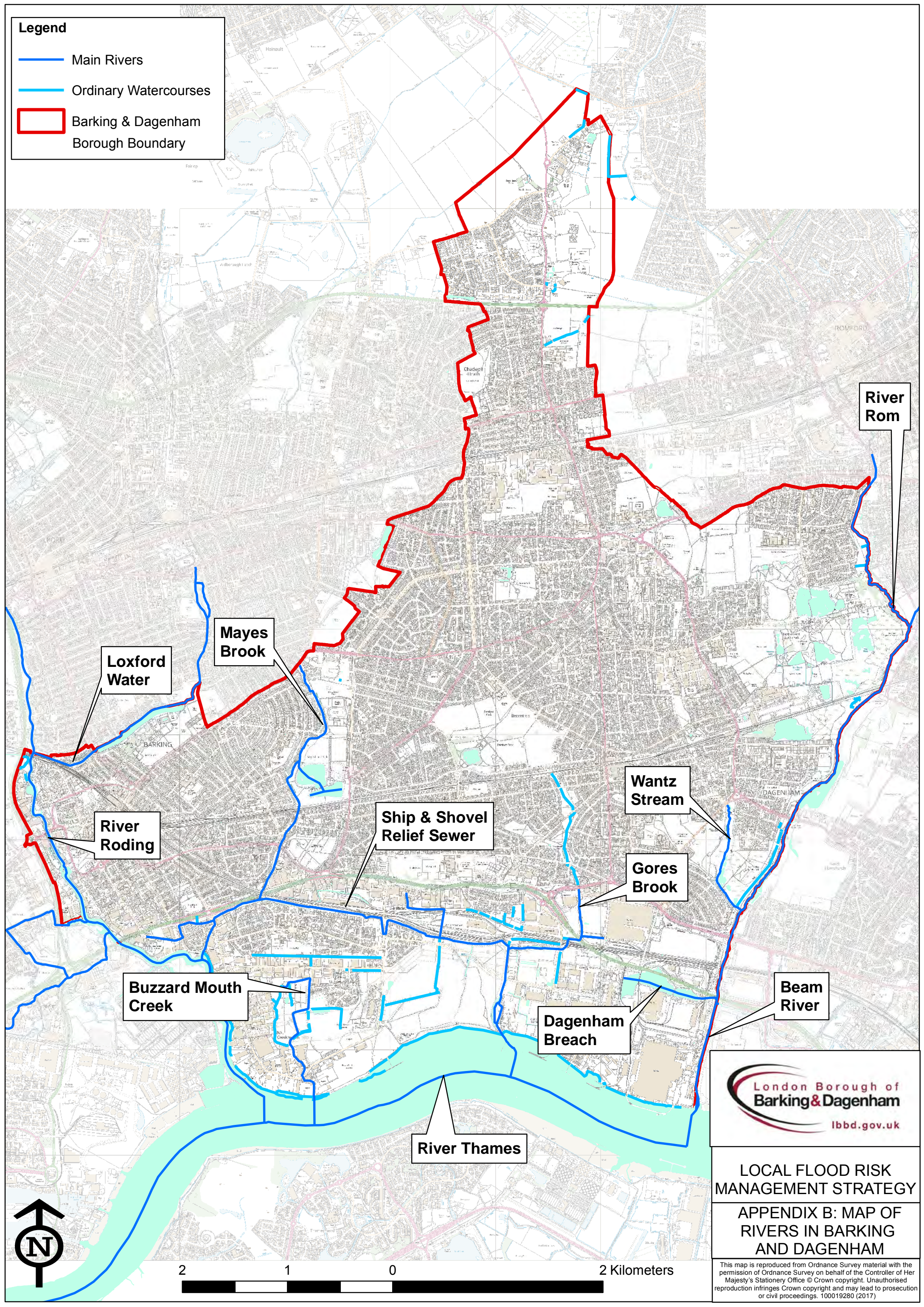
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**ANNEX A**

**Map of Rivers in Barking and  
Dagenham**

**Legend**

-  Main Rivers
-  Ordinary Watercourses
-  Barking & Dagenham Borough Boundary



**River Rom**

**Loxford Water**

**Mayes Brook**

**River Roding**

**Ship & Shovel Relief Sewer**

**Wantz Stream**

**Gores Brook**

**Buzzard Mouth Creek**

**Dagenham Breach**

**Beam River**

**River Thames**



**LOCAL FLOOD RISK MANAGEMENT STRATEGY**

**APPENDIX B: MAP OF RIVERS IN BARKING AND DAGENHAM**

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